

exceeding the calyx in *Morina*; (2) the corolla 2- to 4-lobed (rarely 5-lobed) in *Cryptothladia* versus 5-lobed in *Morina*; (3) the sterile stamens two and as large as the fertile pair, inserted at or near the base of the corolla tube in *Cryptothladia* versus the sterile stamens two, but much smaller than the fertile pair, and inserted just below the fertile two in *Morina*; and (4) the flowers probably cleistogamous in *Cryptothladia* versus not obviously cleistogamous in *Morina*. This last distinction for the flowers as cleistogamous or not may occur as a natural variation within a species. Comparison of the relative lengths of the perianth may or may not be useful for demarcation between species, and differences in the corolla lobing may occur among even closely related species as in the Campanulaceae, e.g., *Cyananthus lichiangensis* W. W. Sm. (5-lobed) and *C. hookeri* C. B. Clarke (mostly 4-lobed). The relative comparison of sterile and fertile stamen pairs may well apply for infrageneric groups. Furthermore, the Morinaceae can be divided into two (and only two) major groups, according to palynological (Blackmore & Cannon, 1983) and morphological evidence. Therefore, it seems appropriate to recognize two genera, *Morina* and *Acanthocalyx*, in the Morinaceae, and to merge *Cryptothladia* into *Morina*.

VALERIANACEAE

Three genera and about 33 species are recognized for the Valerianaceae in China in the forthcoming *Flora of China*, Volume 19: *Nardostachys* (one species, southwestern China), *Patrinia* (11 species throughout China, with six endemic taxa), and *Valeriana* (21 species, throughout China except in Guangdong and Hainan, with 13 endemic taxa).

VALERIANA

1. *Valeriana daphniflora* Hand.-Mazz., Acta Horti Gothob. 9: 179. 1934. TYPE: China. Sichuan: "Sze-ch'uan austro-occid." [southwest Sichuan], "Yenyüen" [Yanyuan], 2600 m, 2 Oct. 1914, H. Handel-Mazzetti 5439, p.p. (lectotype, designated here, WU).

Handel-Mazzetti 5439 is a mixed collection and consists of two sheets belonging to two different species in *Valeriana*. The specimen at WU has a long-

tubular corolla and is thus in accordance with Handel-Mazzetti's 1934 protologue of *V. daphniflora*. However, the second sheet at E features a short and infundibular corolla and is in accordance with *V. stenoptera* Diels. Because Handel-Mazzetti did not designate either sheet as type, we here designate the sheet at WU as lectotype.

2. *Valeriana stenoptera* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 295. 1912. TYPE: China. Yunnan: "Lichiang Range" [Lijiang], 27°25'N, 3050 m, Aug. 1906, G. Forrest 2758 (lectotype, designated here, E; isotype, E).

Valeriana stenoptera Diels var. *cardaminea* Hand.-Mazz., Acta Horti Gothob. 9: 180. 1934, syn. nov. TYPE: China. Yunnan: [northwest Yunnan], "Chungtien" [Xianggelila], 3000–3100 m, 14 Aug. 1915, H. Handel-Mazzetti 7648, p.p. (lectotype, designated here, WU).

The collection *Handel-Mazzetti 7648*, cited by Handel-Mazzetti in 1934 as the type of *Valeriana stenoptera* var. *cardaminea*, consists of two sheets. The sheet at WU has an infundibular corolla with a short corolla tube (ca. 1.5 mm), which is in accordance with the protologue. The second sheet at E has an elongate corolla (ca. 6.5 mm) with a longer corolla tube (ca. 5.5 mm), which better corresponds to *V. daphniflora*. The E sheet, syntypic to the sheet at WU, is excluded from *V. stenoptera* var. *cardaminea*. Handel-Mazzetti (1934) did designate *Handel-Mazzetti 7648* as the type for his new variety. Because the WU sheet for *Handel-Mazzetti 7648* matches very well with the protologue, it is designated here as the lectotype for *V. stenoptera* var. *cardaminea*.

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Taxonomic Notes on Chinese Campanulaceae

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ABSTRACT. Three new combinations are proposed for *Codonopsis convolvulacea* Kurz subsp. *grey-wilsonii* (J. M. H. Shaw) D. Y. Hong, *C. foetens* Hook. f. & Thomson subsp. *nervosa* (Chipp) D. Y. Hong, *C. pilosula* (Franch.) Nannf. subsp. *tangshen* (Oliv.) D. Y. Hong, with changes in rank for all three names. Nine specific, three subspecific, and seven varietal names are reduced to synonymy for the first time in the present paper. In addition, the following names are lectotypified: *C. benthamii* Hook. f. & Thomson, *C. bicolor* Nannf., *C. convolvulacea* subsp. *forrestii* (Diels) D. Y. Hong & L. M. Ma, *C. foetens* Hook. f. & Thomson, *C. foetens* subsp. *nervosa* (Chipp) D. Y. Hong, *C. macrocalyx* Diels, *C. macrocalyx* var. *coerulescens* Hand.-Mazz., *C. macrocalyx* var. *parviloba* J. Anthony, *C. modesta* Nannf., *C. rotundifolia* Benth. in Royle, and *Campanumoea pilosula* Franch. The name *Codonopsis convolvulacea* is neotypified.

Key words: Campanulaceae, China, *Codonopsis*, *Cyananthus*, Flora of China, *Lobelia*.

The most recent taxonomic treatment of the Campanulaceae in China appeared in the *Flora Reipublicae Popularis Sinicae*, Vol. 73(2) (Hong, 1983), in which 16 genera and 157 species were recognized for China. The present author has made further taxonomic revisions in association with Thomas Lammers for the *Flora of China* series. This revision will recognize 16 genera and 163 species, excluding the genera *Sphenoclea* Gaertn. and *Pentaphragma* (Roxb. ex Jack) Wall. ex G. Don, each as an independent family. *Cephalostigma* A. DC. and *Pratia* Gaudich. will be reduced to the synonymy of *Wahlenbergia* Schrad. ex Roth and *Lobelia* L., respectively. Additionally recognized will be the previously published genus *Echinocodon* D. Y. Hong (Hong, 1984) and the separation of *Cyclocodon* Griff. ex Benth. & Hook. f. from *Campanumoea* Blume. We here report associated and novel nomenclatural actions and synonymy to precede the taxonomic treatment of the Campanulaceae for a forthcoming volume of the *Flora of China* (Vol. 19).

CODONOPSIS

Codonopsis Wall. is an eastern and Middle Asian genus, in which we recognize 42 species (D. Y. Hong, unpublished). These taxa are concentrated in the Himalayas and adjacent Hengdun Mountains in China.

- 1. *Codonopsis benthamii*** Hook. f. & Thomson, J. Proc. Linn. Soc., Bot. 2: 14. 1857. TYPE: India. Sikkim: Lachen, 2740 m, 31 July 1849, *J. D. Hooker s.n.* (lectotype, designated here, K).

Codonopsis macrocalyx Diels, Notes Roy. Bot. Gard. Edinburgh 5: 170. 1912, syn. nov. TYPE: China. Yunnan: Lijiang, 27°20'N, 3050–3350 m, Sep. 1906, *G. Forrest 3008* (lectotype, designated here, E; isotype, K).

Codonopsis macrocalyx Diels var. *parviloba* J. Anthony, Notes Roy. Bot. Gard. Edinburgh 15: 183. 1926, syn. nov. TYPE: China. Yunnan: Dali, on E flank of Tali range, 25°40'N, 2740–3050 m, July 1906, *G. Forrest 3854* (lectotype, designated here, K; isotype, E).

Codonopsis macrocalyx Diels var. *coerulescens* Hand.-Mazz., Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 61(20): 169. 1924, syn. nov. TYPE: China. Yunnan: Mekong–Salween divide, “Schöndsu-la,” 24°4'N, 4025 m, 2 Aug. 1916, *H. F. von Handel-Mazzetti 9618* (lectotype, designated here, WU; isotype, E).

Discussion. In the protologue of *Codonopsis macrocalyx* var. *coerulescens*, Handel-Mazzetti designated only the one collection, his 9618, but did not indicate the herbarium of deposit. As the author's work was based at the herbarium WU, I have chosen the sheet at WU as the lectotype.

Anthony described *Codonopsis macrocalyx* var. *parviloba* from material seen at E and K from Yunnan, China (*Forrest 3854, 24723*), and Burma (Myanmar) (*F. Kingdon-Ward 1655, E* only). The earlier syntype by G. Forrest (3854, K) is selected as lectotype, with its duplicate at E.

Hooker's collection of *Codonopsis benthamii* consists of four sheets at Kew, collected on three occasions. The protologue of the species indicates “fl. Jul.,” and thus I have chosen the specimen “31 Jul.” as the lectotype.

The type specimen of *Codonopsis benthamii* was collected in Sikkim, India, while the type specimens of

C. macrocalyx and its two varieties were all from northwestern Yunnan in China. The group of plants from western Sichuan, southeastern Tibet, and northwestern Yunnan has been treated as *C. macrocalyx* or its varieties. However, examining a large quantity of specimens including the syntypes of *C. benthamii* from Nepal, Sikkim, and Bhutan at K and E in 2007, I found that the western and eastern populations actually comprise a single group without distinct differences. The distributional range of *C. benthamii* extends from Nepal eastward to western Sichuan in China, and via Sikkim, Bhutan, Assam, into southeastern Tibet and northern Burma (Myanmar).

- 2. *Codonopsis bhutanica*** Ludlow, J. Roy. Hort. Soc. 97: 127. 1972. TYPE: Bhutan. Shingbe, Me La, 3700 m, 2 July 1949, *F. Ludlow, G. Sherriff & J. H. Hicks 20786* (holotype, BM; isotypes, E, K).

Codonopsis xizangensis D. Y. Hong, Acta Phytotax. Sin. 18: 246. 1980, syn. nov. TYPE: China. Xizang [Tibet]: Cona, 1975, *C. Y. Wu & S. K. Chen 75-907* (holotype, KUN).

Discussion. Cona County in Tibet is very close to the border between China and Bhutan. When I described *Codonopsis xizangensis* as new, I was unaware of the similar *C. bhutanica*. They are apparently conspecific, sharing a small tubular corolla, a glabrous calyx tube, and an erect or ascending, usually multiflowered stem.

- 3. *Codonopsis convolvulacea*** Kurz, J. Bombay Nat. Hist. Soc. 11: 195. 1873. TYPE: China. Yunnan: Mengzi, 1520–1830 m, s.d., *A. Henry 9425* (neotype, designated here, PE; isotypes, E, K).

Discussion. Kurz's protologue (1873: 195) mentioned only "Yunnan, Hotha, 15 Aug. (fl.)" for type detail. The present author visited quite a large number of herbaria worldwide, including BM, E, G, K, LD, W, WU, and CAL (where Kurz had been curator of the herbarium since 1864), but I failed to find the collection. It seems to me that the collection was not preserved. A comparable collection from Yunnan representative of the species is selected as neotype at PE, with duplicates available at E and K.

- 3a. *Codonopsis convolvulacea*** subsp. **convolvulacea**.

- 3b. *Codonopsis convolvulacea*** subsp. **forrestii** (Diels) D. Y. Hong & L. M. Ma, Fl. Sichuan. 10: 546. 1992. Basionym: *Codonopsis forrestii* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 171. 1912. TYPE: China. Yunnan: on banks of Yangtse

(Lijiang?), 1530–2130 m, Sep. 1904, *G. Forrest 48* (lectotype, designated here, E; isotype, CAL).

Codonopsis retroserrata Z. T. Wang & G. J. Xu, Acta Phytotax. Sin. 31(2): 186, fig. 2. 1993, syn. nov. TYPE: China. Sichuan: Yanyuan, 2400 m, 5 Sep. 1986, *Z. T. Wang 869382* (holotype, CPU not seen; isotype, PE).

- 3c. *Codonopsis convolvulacea*** Kurz subsp. **grey-wilsonii** (J. M. H. Shaw) D. Y. Hong, comb. et stat. nov. Basionym: *Codonopsis grey-wilsonii* J. M. H. Shaw, New Plantsman 3(2): 93. 1996. Replaced synonym: *Codonopsis nepalensis* Grey-Wilson, Plantsman 12(2): 99. 1990, non *Codonopsis nepalensis* Hara, 1978. TYPE: Nepal. W of Marpa, 3500 m, 6 Sep. 1973, *Grey-Wilson & Philips 777* (holotype, K).

Discussion. Diels mentioned the collection *G. Forrest 48* in the 1912 protologue for his name *Codonopsis forrestii*, but did not indicate the herbarium of deposit (Diels, 1912). As far as is known, this collection is deposited in at least two herbaria, E and CAL. I examined the specimen in E first and select it as lectotype because I think it is more easily accessible.

The authors of *Codonopsis retroserrata* compared their specimen (*Z. T. Wang 869382*) with *C. convolvulacea* var. *hirsuta* (Hand.-Mazz.) Nannf., but not with *C. convolvulacea* subsp. *forrestii* [\equiv *C. forrestii*]. I am unable to find any significant difference between *C. retroserrata* and *C. convolvulacea* subsp. *forrestii* and therefore synonymize *C. retroserrata* to *C. convolvulacea* subsp. *forrestii* here.

Critical examination of all specimens available at BM, E, K, KUN, and PE, as well as field observations in southern Tibet and northwestern Yunnan, shows the *Codonopsis convolvulacea* group to be extremely variable. The group is distributed from southern Yunnan to Nepal via northwestern Yunnan, western Sichuan, and southern Tibet. According to my observations, plants in Nepal and southern Tibet differ from those in the other regions in having relatively larger leaves, a relatively larger corolla with the lower third internally pubescent and with a remarkable dark purple ring at base, and the hypanthium and fruit sometimes rounded at base. However, these differences are correlated with geography but are not distinct. I therefore consider *C. grey-wilsonii* as a geographical race and thus treat it here as a subspecies of *C. convolvulacea*.

- 4. *Codonopsis foetens*** Hook. f. & Thomson, J. Proc. Linn. Soc., Bot. 2: 16. 1857. TYPE: [India.] Sikkim: Kengna, Lachen, 4570 m, 24 July 1849,

J. D. Hooker s.n. (lectotype, designated here, K; isotype, BM).

Discussion. J. D. Hooker made three collections, all represented at Kew, for *Codonopsis foetens* from Sikkim at altitudes from 4270 to 4880 m in 1849, on July 15, July 24, and September 11. The specimen collected on July 24 is relatively complete and gives the altitude as 4570 m, and I have therefore chosen it as the lectotype.

Codonopsis foetens is characterized by its small leaves, erect and single-flowered stems, always hispidulous calyx lobes, and campanulate corolla. The taxon consists of two subspecies. The typical subspecies has smaller leaf blades (5–9[–15] × 5–7 [–12] mm), and the calyx lobes are often verrucose-serrate. It is found from Sikkim to southern Tibet (eastward to Zayü). The other subspecies occupies the eastern part of the species range, i.e., southeastern Gansu, southeastern Qinghai, western Sichuan, the southeastern corner of Tibet, and northwestern Yunnan in China.

4a. *Codonopsis foetens* subsp. *foetens*.

4b. *Codonopsis foetens* Hook. f. & Thomson subsp. *nervosa* (Chipp) D. Y. Hong, comb. et stat. nov. Basionym: *Codonopsis ovata* Benth. var. *nervosa* Chipp, J. Linn. Soc., Bot. 38: 385. 1908. *Codonopsis nervosa* (Chipp) Nannf., Acta Horti Gothob. 5: 26, pl. 13b. 1930. TYPE: China. Sichuan: “Tachienlu” [Kangding], s.d., A. E. Pratt 632 (lectotype, designated here, K).

Codonopsis nervosa (Chipp) Nannf. subsp. *macrantha* (Nannf.) D. Y. Hong & L. M. Ma, Fl. Sichuan. 10: 541. 1992, syn. nov. Basionym: *Codonopsis macrantha* Nannf., Notes Roy. Bot. Gard. Edinburgh 16: 157, fig. 1a, pl. 229. 1931. *Codonopsis nervosa* (Chipp) Nannf. var. *macrantha* L. T. Shen in D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 57. 1983. TYPE: China. SE Tibet, Salween–Kiujiang divide, 28°40'N, 98°15'E, Aug. 1919, G. Forrest 18949 (holotype, E; isotypes, K, W).

Discussion. Chipp cited the two specimens in the protologue for *Codonopsis ovata* var. *nervosa*, Wilson 3984 and Pratt 632. Although Chipp mentioned Wilson 3984 first, the specimen has no exact locality. Thus, I have chosen Pratt 632 as the lectotype.

The type of *Codonopsis ovata* var. *nervosa* [≡ *C. foetens* subsp. *nervosa*] is from Kangding in Sichuan Province, China, while that of *C. macrantha* is from Markam in the southeastern corner of Tibet. Plants of this group in China have been recognized as *C. nervosa* and *C. macrantha* or two subspecies or varieties. A critical examination of hundreds of specimens, including the types of *C. foetens* and the two infraspecific taxa mentioned above, shows that

this group of plants, which extends from Sikkim eastward to western Sichuan and northward to southeastern Qinghai and southeastern Gansu, cannot be split into two distinct units at the species level.

Codonopsis foetens subsp. *nervosa* differs from the typical subspecies only in having larger leaf blades (10–15 × 10–15 mm) and calyx lobes that are always entire.

5. *Codonopsis levicalyx* L. T. Shen, Acta Phytotax. Sin. 13(3): 55, pl. 5, fig. 11a, b. 1975. TYPE: China. Sichuan: Nanping, Lingjiang, 2900 m, s.d., X. Y. Tan & J. Z. Wu 6407 (holotype, WCU not seen).

Codonopsis levicalyx L. T. Shen var. *hirsuticalyx* L. T. Shen in D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 183. 1983, syn. nov. TYPE: China. Sichuan: Emei Shan, s.d., M. L. Tu & Y. L. Zhen 51-01 (holotype, WCU not seen).

Codonopsis rotundifolia Benth. var. *angustifolia* Nannf., Bot. Mag. 167, pl. 131. 1950, syn. nov. TYPE: China. Xizang [Tibet]: Nyingchi [Kongbo Prov.], Doshong, 28 July 1938, F. Ludlow, G. Sherriff & G. Taylor 5377a (holotype, BM).

Discussion. The species *Codonopsis rotundifolia* has the leaves mostly cordate, less frequently truncate or rounded at the base, dentate on the margins, and nearly glabrous or sparsely hirsute along the veins on both surfaces; it is found west of 86°E. However, *C. rotundifolia* var. *angustifolia* was described from Nyingchi in southeastern Tibet (Kongbo Province) and is contrasted by its leaves that are cuneate or obtuse at the base, crenulate or entire on the margins, and sparsely or densely hirsute on both surfaces. Our critical examination of the type and paratype specimens and a large number of other collections from this region shows that they are conspecific with *C. levicalyx*, but distinctly differ from *C. rotundifolia*.

6. *Codonopsis pilosula* (Franch.) Nannf., Acta Horti Gothob. 5: 29. 1930. Basionym: *Campnumoea pilosula* Franch., Pl. David. 1: 192. 1884. TYPE: China. “near Pékin” [Beijing], cult. in “Ta-tchiao-cha” as medicinal plants, July 1863, A. David 2333 (lectotype, designated here, P not seen).

Codonopsis microtubulosa Z. T. Wang & G. J. Xu, Acta Phytotax. Sin. 31(2): 184, fig. 1. 1993, syn. nov. TYPE: China. Sichuan: Nanping, 2500 m, 23 July 1986, Z. T. Wang & B. Y. Yü 867206 (holotype, CPU not seen; isotype, PE).

Codonopsis pilosula (Franch.) Nannf. var. *volubilis* (Nannf.) L. T. Shen in D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 41. 1983, syn. nov. Basionym: *Codonopsis volubilis* Nannf., Bot. Tidsskr. 34: 388, pl. 5, fig. 1h. 1940. TYPE: China. Shanxi: “Chiao-chéng distr.”

[Jiaocheng Co.], 1900 m, 20 Aug. 1924, *H. Smith* 7201 (holotype, GH not seen; isotypes, BM, PE).

Codonopsis pilosula (Franch.) Nannf. var. *glaberrima* (Nannf.) P. C. Tsoong ex L. T. Shen et al., *Acta Phytotax. Sin.* 13(3): 58. 1975, syn. nov. Basionym: *Codonopsis glaberrima* Nannf., *Bot. Tidskr.* 34: 387. 1940. TYPE: China. [Central] Shanxi: "Koan yün miao," 1500–1700 m, 24 Aug. 1916, *E. Licent* 2793 (holotype, W).

Codonopsis pilosula (Franch.) Nannf. var. *modesta* (Nannf.) L. T. Shen in D. Y. Hong, *Fl. Reipubl. Popularis Sin.* 73(2): 41. 1983, syn. nov. Basionym: *Codonopsis modesta* Nannf., *Acta Horti Gothob.* 5: 26. 1930. TYPE: China. [N] Sichuan: "Ch'un-Ch'e," ca. 3200 m, s.d., *H. Smith* 4304 (lectotype, designated here, BM; isotype, GH not seen).

Discussion. *Codonopsis pilosula* [\equiv *Campanumoea pilosula*] has been cultivated very commonly in northern China, and it is nearly the only species of *Codonopsis* in cultivation. Therefore, the collection *A. David* 2333, cultivated in Beijing, is designated here as the lectotype. It is preferred to the P syntype, *A. David* 2809, noted to be from "Inner Mongolia, Ourato," which was collected three years later, in 1866.

The protologue of *Codonopsis microtubulosa* stated that the taxon differed from *C. pilosula* in having a smaller corolla and smaller leaves. However, it resembles *C. pilosula* very much in general appearance, and thus I consider the taxon to be an extreme form or a mutant of *C. pilosula*. The name *C. microtubulosa* is newly synonymized herein to *C. pilosula*.

In the 1930 protologue for *Codonopsis pilosula* var. *modesta*, Nannfeldt indicated *H. Smith* 4304 as the type and *H. Smith* 4009 (N Sichuan: Sung-pan [Songpan], Huang-Ch'en-Kuan, ca. 3200 m, s.d., GH not seen) as the paratype, but failed to indicate any herbarium of deposit for either collection. The type is clarified here, following the describing author's intent.

6a. *Codonopsis pilosula* subsp. *pilosula*.

6b. *Codonopsis pilosula* subsp. *tangshen* (Oliv.) D. Y. Hong, comb. et stat. nov. Basionym: *Codonopsis tangshen* Oliv., *Hooker's Icon. Pl.* 20: tab. 1966. 1891. TYPE: China. "W Hupeh [Hubei]: Hsingshan [Xingshan Co.]," s.d., *A. Henry* 6468 (holotype, K 000229965; isotypes, K 000229964, K 000229966, K 000229969).

Discussion. *Codonopsis tangshen* [\equiv *C. pilosula* subsp. *tangshen*] differs from *C. pilosula* only in having the calyx adnate to the base of the ovary and thus nearly entirely free from the ovary in appearance, and in its leaves that are mostly truncate, rounded, or less frequently cordate at the base. However, these two differences are quantitative and gradational. For example, five sheets of four collections at K from Mt. Taibai, Shaanxi Province (*W. Purdom* 675 [2 sheets]

and s.n., and *E. Licent* 3191), have been examined, which show that the calyx tube varies in length from 1.5 mm (similar to the typical form of *C. tangshen*) to 3 mm (somewhat similar to *C. pilosula*). *Codonopsis pilosula* subsp. *tangshen* occurs in western Hubei and adjacent regions.

7. *Codonopsis rotundifolia* Benth. in Royle, Ill. *Bot. Himal. Mts.* 254, tab. 62. 1839. TYPE: Tab. 62 in Royle, 1839 (lectotype, designated here, tab. 62 in Royle, 1839).

Codonopsis longifolia D. Y. Hong, *Acta Phytotax. Sin.* 18: 245–246, pl. 1, fig. 4. 1980, syn. nov. TYPE: China. Xizang [Tibet]: Nyalam, 3600–3700 m, 27 Aug. 1972, *Xizang Chinese Materia Medic. & Herbs Exped.* 1563 (holotype, PE).

Discussion. *Codonopsis rotundifolia* was described by Bentham (Royle, 1839) from northwestern India, while *C. longifolia* was known from Nyalam in southern Tibet. *Codonopsis rotundifolia* is a rather variable species with the leaf base varying from cordate to rounded, the leaf blades from glabrous to sparsely hirsute, and the calyx lobes from glabrous to densely ciliate. The type specimen of *C. longifolia* falls within the range of variation of *C. rotundifolia*. Because no specimen has been found for *C. rotundifolia*, the 1839 plate associated with the protologue is selected as lectotype.

8. *Codonopsis viridiflora* Maxim., Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 496. 1881. TYPE: China. "Prov. Kansu" [Gansu]: 1872, *N. M. Przewalsky* 316 (holotype, K).

Codonopsis bicolor Nannf., *Acta Horti Gothob.* 5: 24. 1930, syn. nov. TYPE: China. Sichuan: "Dongrergo," ca. 4200 m, s.d., *H. Smith* 3530 (lectotype, designated here, E; isotypes, BM, PE).

Discussion. Nannfeldt (1930) did indicate *H. Smith* 3530 as the type in the protologue of *Codonopsis bicolor*, but failed to designate the herbarium of deposit. This oversight is clarified herein.

The present author examined the types of *Codonopsis viridiflora* and *C. bicolor*, as well as a large quantity of specimens from Gansu and western Sichuan, but I failed to find any significant differences. Instead, the two names should be considered as conspecific, with *C. viridiflora* having priority.

CYANANTHUS

The genus *Cyananthus* Wall. ex Benth. is endemic to the Pan-Himalayan region (the Himalayas and the Hengduan Mountains). There are three recent taxonomic treatments: Lian (1983) recorded 25 species in

China; Hong and Ma (1991) recognized 19 species, with 18 in China; and Shrestha (1997) recognized 23 species, with 20 in China. Seventeen species will be recognized in a forthcoming volume of the *Flora of China* (Vol. 19).

- 1. *Cyananthus hookeri*** C. B. Clarke in Hook. f., Fl. Brit. Ind. 3: 435. 1881. TYPE: Nepal. [E Nepal], Wamanchun (Wolangchung), 4300 m, s.d., *J. D. Hooker* 249 (holotype, K).

Cyananthus cronquistii K. K. Shrestha, Kew Bull. 49(1): 143. 1994, syn. nov. TYPE: China. Yunnan: "Atuntze" [Dêqên], 28°35'N, 99°10'E, 4420 m, s.d., *G. Forrest* 20165 (holotype, E).

Discussion. *Cyananthus cronquistii* was described by Shrestha (1994) as new, based on its differences from *C. hookeri* mainly in the plants being glabrous (vs. densely hairy in *C. hookeri*), the calyx being sparsely hairy with soft brown hairs (vs. densely covered with stiff whitish hairs), and its smaller corolla less than 1 cm long (vs. longer than 1 cm). However, the holotype for *C. cronquistii* (*G. Forrest* 20165) has corollas 9–10 mm long and calyces with sparsely stiff whitish hairs. *Cyananthus hookeri* was later described by Shrestha (1997: 431) as having "corolla...0.7–1.3 cm long." Among a large number of specimens in K and E determined by Shrestha to either *C. hookeri* or *C. cronquistii*, one is unable to apply the discrete differences as mentioned above. For example, *Handel-Mazzetti* 7714 (K), determined as *C. hookeri*, has glabrous stems and leaves, and the calyx is very sparsely hairy (more sparsely than typical for *C. cronquistii*). In contrast, the WU sheet of the same collection does have glabrous stems, but varies in having only sparsely hairy leaves and a calyx that is rather densely hairy. The K accession for *Delavay* 148, determined as *C. hookeri*, possesses glabrous stems, sparsely hairy leaves, and calyces that are moderately to densely hairy. By comparison, the E accession for *G. Forrest* 22477, identified as *C. cronquistii*, has calyces with rather densely yellow stiff hairs and corollas to 11 mm long. Such variability suggests that the two taxa are not distinct, and *C. hookeri* is the prior name.

- 2. *Cyananthus incanus*** Hook. f. & Thomson, J. Proc. Linn. Soc., Bot. 2: 20. 1857. TYPE: [India.] Sikkim: 3660–3960 m, 23 July 1849, *J. D. Hooker s.n.* (holotype, K).

Cyananthus incanus Hook. f. & Thomson subsp. *petiolatus* (Franch.) D. Y. Hong & L. M. Ma, Acta Phytotax. Sin. 29(1): 44. 1991, syn. nov. Basionym: *Cyananthus petiolatus* Franch., Bull. Soc. Philom. Paris, sér. 8, 3:

147. 1891. TYPE: China. Sichuan: "Ta-t sien-lou" [Kangding], s.d., *R. P. Soulié s.n.* (holotype, P not seen). *Cyananthus incanus* Hook. f. & Thomson subsp. *orientalis* K. K. Shrestha, Acta Phytotax. Sin. 35(5): 407. 1997, syn. nov. TYPE: Nepal. Upper Barun valley, 4950 m, 20 Sep. 1972, *T. Wraber* 238 (holotype, BM; isotypes, E, LE not seen). *Cyananthus dolichosceles* C. Marquand, Bull. Misc. Inform. Kew 1924: 250. 1924, syn. nov. TYPE: China. Sichuan: 2700–3200 m, July 1903, *E. H. Wilson* 3983 (holotype, K).

Discussion. Shrestha (1997) stated that his *Cyananthus incanus* subsp. *orientalis* differed from the typical subspecies in having the stems moderately pubescent and the calyx glabrous. However, the specimen *Cutting & Vernay* 124 from Tibet (K), determined by Shrestha, shows rather dense pubescence on the calyx, and additional specimens seen at K (*Cutting & Vernay* 109A, 104B, 107) also reveal brown hirsute hairs on the calyces. It is clear that the variation in the indumentum of stems and calyx occurs within this specimen group, but does not appear to be correlated with geography.

Marquand (1924) compared *Cyananthus dolichosceles* to *C. pedunculatus* C. B. Clarke (Clarke, 1881), stating that it differed from the latter in having the calyx glabrous and the peduncles shorter (to 1–4 cm). Hong and Ma (1991) and Shrestha (1997) correctly compared *C. dolichosceles* to *C. incanus*, noting that it differed from the latter in the glabrous or nearly glabrous calyces, as well as the longer peduncles (6–30 mm vs. < 10 mm). Examination of many exsiccatae from Kangding (the type locality for *C. dolichosceles*) in PE shows that the lengths of peduncles and the indumentum of the calyces vary widely, and that the differences among individuals within a single collection may span the variability between these two taxa. For example, in the collection *Kuan & Wang* 804 (PE), the peduncles vary from 5 to 15 mm and the calyx indument ranges from glabrous to sparsely hairy. Another PE collection, *Kuan & Wang* 1033, has peduncles from 3 to 14 mm, while the calyces range from glabrous to rather densely hairy. Finally, *C. S. Liu* 1287 at PE has even longer peduncles from 8 to 17 mm, while the calyces may be glabrous, sparsely hairy, or even moderately to densely hairy.

LOBELIA

Lobelia is a large and nearly cosmopolitan genus with approximately 350 species, mainly in the tropics and subtropics. A few species extend in distribution into temperate regions, and 24 species will be recognized in the forthcoming treatment of the Campanulaceae for the *Flora of China* (Vol. 19).